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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCRRORY, CHIEF

MONTHLY NEWS LETTER

WASHINGTON, D. C., NOVEMBER 20, 1929.

ON NOVEMBER 17 MR. McCRRORY, AS A MEMBER OF THE DEPARTMENT EVERGLADES COMMITTEE, LEFT WASHINGTON FOR FLORIDA. THE EVERGLADES COMMITTEE WAS SET UP BY DR. WOODS AND INCLUDES IN ITS MEMBERSHIP REPRESENTATIVES OF THE VARIOUS BUREAUS THAT DEAL WITH PHASES OF AGRICULTURE NOW UPPERMOST IN THE GENERAL EVERGLADES PROBLEM. THE COMMITTEE WILL SPEND ABOUT A WEEK SECURING FIRST-HAND INFORMATION ON THE EXISTING CONDITIONS, AS A BASIS FOR MAKING RECOMMENDATIONS THAT IT IS HOPED WILL BE OF ASSISTANCE TO THE PEOPLE OF FLORIDA IN DEALING WITH THIS DIFFICULT SITUATION.

MR. McCRRORY SPENT OCTOBER 26 IN TOLEDO INSPECTING THE WORK IN PROGRESS ON CORN BORER CONTROL MACHINERY AND DISCUSSING PLANS FOR THE NOVEMBER 7 FIELD DAY.

MESSRS. McCRRORY AND BARROWS ATTENDED THE CORN BORER CONTROL MACHINERY CONFERENCE AND FIELD DAY AT TOLEDO NOVEMBER 7, WHEN A VARIETY OF CONTROL MACHINES WERE DEMONSTRATED BEFORE AN INTERESTED GROUP OF APPROXIMATELY ONE HUNDRED AGRICULTURAL ENGINEERS, AND FARM MACHINERY MANUFACTURERS' REPRESENTATIVES. SHORT TALKS WERE GIVEN BY PROJECT LEADERS PREVIOUS TO OPERATING THEIR MACHINES WHICH CONSISTED OF VARIOUS TYPES OF PLOWS, BINDERS WITH STATIONARY KNIFE LOW-CUTTING ATTACHMENT, HAND HOES, STALK SHAVERS, SIDE DELIVERY AND DUMP RAKES, STALK BEATER, STUBBLE PULVERIZER, FIELD BURNERS, AND A MOBILE STEAMER. WHILE SOME OF THE MACHINERY WAS PURELY EXPERIMENTAL, IT WAS THOUGHT THAT PERCHANCE SOMEONE MIGHT FOLLOW THE IDEA UP AND IMPROVE IT OR GET A LEAD FOR AN ENTIRELY DIFFERENT SCHEME. MR. McCRRORY OPENED THE MEETING AND DISCUSSED ITS PURPOSE. MR. L. H. WORTHLEY, ADMINISTRATOR OF CORN BORER CONTROL, DISCUSSED THE QUARANTINE, DR. CAFFREY, THE ENTOMOLOGICAL PHASES AND PROFESSOR C. O. REED OF OHIO STATE UNIVERSITY THE EARLY STAGES OF MECHANICAL CONTROL.

R. B. GRAY SPENT OCTOBER 15 IN MOLINE, ILL., WITH THE JOHN DEERE IMPLEMENT COMPANY, VIEWING THEIR VARIOUS LINES OF MACHINERY AND CONFERRING WITH OFFICIALS ON FARM MACHINERY IN GENERAL AND CORN BORER MACHINERY IN PARTICULAR. OCTOBER 16 HE SPENT IN CHICAGO WITH THE INTERNATIONAL HARVESTER COMPANY ON A SIMILAR MISSION.

FRANK IRONS SPENT NOVEMBER 12 AND 13 IN WESTERVILLE, OHIO CONFERRING WITH OFFICIALS OF THE BENNETT MANUFACTURING CO., PRELIMINARY TO THE DEVELOPMENT OF A STATIONARY KNIFE LOW-CUTTING ATTACHMENT FOR THE BENNETT CORN HARVESTER.

DURING THE LAST WEEK IN OCTOBER LEWIS A. JONES IN COMPANY WITH H. H. BENNETT OF THE BUREAU OF CHEMISTRY AND SOILS AND PROF. M. F. MILLER OF THE UNIVERSITY OF MISSOURI INSPECTED SEVERAL FARMS IN NORTH CENTRAL MISSOURI WITH A VIEW OF LOCATING A SOIL EROSION EXPERIMENT FARM ON TYPICAL SHELBY SOIL. A SATISFACTORY FARM OF 220 ACRES WAS FINALLY LOCATED ABOUT 9 MILES WEST OF BETHANY, MISSOURI AND AN ATTEMPT IS NOW BEING MADE BY THE LOCAL PEOPLE TO LEASE THE FARM AND TURN IT OVER TO THE DEPARTMENT FOR USE AS A SOIL EROSION EXPERIMENT FARM. UPON THE COMPLETION OF HIS WORK IN MISSOURI MR. JONES VISITED THE EXPERIMENTAL FARMS LOCATED AT HAYS, KANSAS, GUTHRIE, OKLAHOMA, AND TEMPLE, TEXAS. HE ALSO DELIVERED A TALK BEFORE THE SOIL EROSION CONGRESS CALLED BY THE GOVERNOR OF OKLAHOMA AT THE STATE HOUSE IN OKLAHOMA CITY ON NOVEMBER 1. MR. JONES RETURNED TO WASHINGTON NOVEMBER 10.

R. G. HEMPHILL AND HIS ASSISTANT, O. A. FARIS, HAVE SENT IN A BRIEF PROGRESS REPORT CONTAINING SOME INTERESTING DATA AND PHOTOGRAPHS PERTAINING TO THEIR STUDY OF SILT DEPOSITS IN MEDINA LAKE, TEXAS. WHEN THE SURFACE OF THE WATER IN THIS RESERVOIR IS AT SPILLWAY LEVEL, BACKWATER EXTENDS 15 1/2 MILES ABOVE THE DAM. IN THE SPRING OF 1929 THE WATER SURFACE REACHED ITS LOWEST LEVEL IN MANY YEARS, BACKWATER EXTENDING ONLY ABOUT 8 MILES FROM THE DAM. THE LOWERING WATER SURFACE HAD LEFT EXPOSED LARGE AREAS OF SILT WHICH HAD BEEN DEPOSITED AT HIGHER STAGES. RAINS ON THE SHED ABOVE THE RESERVOIR ON MAY 12 AND 13 PRODUCED A SMALL FLOOD WHICH HAD PRACTICALLY SUBSIDED BY MAY 15 BUT HAD ADDED 7,500 ACRE-FEET OF WATER TO THE AVAILABLE STORED SUPPLY. THIS COMBINATION OF CONDITIONS OFFERED A GOOD OPPORTUNITY TO SECURE DATA OF VALUE, AND A TRIP UP THE RESERVOIR WAS MADE BY MOTOR BOAT TO MAKE AN INVESTIGATION. THE INFORMATION PARTICULARLY DESIRED HAD TO DO WITH BEHAVIOR OF SILT-LADEN INFLOW, SCOURING OF DEPOSITS, MECHANICAL COMPOSITION OF DEPOSITS, AND VOLUME WEIGHT OF DEPOSITS. THE SILT DEPOSITS THAT HAD BEEN EXPOSED TO THE SUN AND AIR AS THE WATER LOWERED, HAD DRIED AND CRACKED, THE CRACKS RANGING IN WIDTH UP TO 4 INCHES AND PROBABLY EXCEEDING 12 INCHES IN DEPTH. THE FLOOD OF MAY 12 AND 13, COMING DOWN ON THIS HARDENED AND CRACKED SURFACE, SCOURED OFF THE TOP FOOT OR MORE AND A PART OF THE SOFT BUT TENACIOUS DEPOSIT UNDERNEATH, AND CARRIED IT DOWNSTREAM. THE DEPTH OF SCOUR IN SOME PARTS OF THE CHANNEL WAS ESTIMATED AT MORE THAN 2 FEET. THE GRINDING AND WEARING OF THE BLOCKS OF SILT AS THEY ROLLED ALONG THE BOTTOM OF THE RESERVOIR HAD REDUCED THEM TO THE APPEARANCE OF COBBLE STONES. EXAMINATION OF REMAINING DEPOSITS OF SILT AFTER THE TOP SURFACE HAD BEEN WASHED AWAY INDICATED THAT THE DRYING AND CONSOLIDATION OF A DEPOSIT MORE THAN A FOOT BELOW ITS SURFACE TAKES PLACE VERY SLOWLY, SINCE A SHOVEL HANDLE COULD BE PUSHED INTO THIS TO A DEPTH OF 18 INCHES WITH VERY LITTLE EFFORT. SILT SAMPLES FROM THE BOTTOM OF THE RESERVOIR WERE TAKEN AND VOLUME WEIGHT DETERMINATIONS MADE. THESE INDICATED THAT THE GENERAL AVERAGE RELATION BETWEEN WEIGHT AND VOLUME OF DEPOSITS IN THE LAKE WILL BE SUBSTANTIALLY LESS THAN 70 POUNDS OF DRY SILT TO THE CUBIC FOOT OF DEPOSIT.

A. L. FELLOWS HAS FURNISHED THE FOLLOWING NOTES CONCERNING THE CONSTRUCTION OF THE COLD SPRINGS CREEK DAM ON THE WIND CAVE GAME PRESERVE, NEAR HOT SPRINGS, S. DAK. THE CREST OF THE DAM IS 28.5 FEET WIDE, 290 FEET LONG, AND 48 FEET ABOVE THE ORIGINAL BED OF COLD SPRINGS CREEK AT THE CENTER OF THE SITE. THE ENTIRE UPSTREAM FACE HAS A SLOPE OF 3 TO 1 AND THE

the first time I have seen it. It is a very large tree, and has a very large trunk. The bark is rough and grey, and the leaves are green and pointed. The flowers are white and fragrant. The fruit is round and yellow, and tastes very sweet. The tree is very tall and straight, and its branches spread out wide. It is a very beautiful tree, and I am glad to have seen it.

The second tree I saw was a palm tree. It is a very tall and slender tree, with long, thin leaves that curve upwards at the ends. The trunk is smooth and light brown, and there are many small, round fruits hanging from the branches. The tree is very tall and straight, and its branches spread out wide. It is a very beautiful tree, and I am glad to have seen it.

DOWNSHIFT FACE HAS SLOPES OF 2 TO 1 UP TO THE LEVEL 21 FEET BELOW THE CREST AND 1 1/2 TO 1 ABOVE THAT LEVEL. THE EMBANKMENT IS COMPOSED OF EARTH DEPOSITED IN LAYERS, SPRINKLED AND ROLLED, WITH A BLANKET OF GRAVEL AND ROCK RIPRAP, 2 1/2 FEET IN THICKNESS, OVER THE UPSTREAM FACE. TWO PER CENT WAS ALLOWED FOR POSSIBLE SHRINKAGE. OTHER FEATURES OF IMPORTANCE ARE A CUTOFF TRENCH, 10 FEET WIDE ON THE BOTTOM, EXCAVATED TO BEDROCK WHICH IS SOME 9 FEET BENEATH THE ORIGINAL SURFACE, ACROSS THE VALLEY AND BACKFILLED WITH PUDDLED CLAY, A 12-INCH CAST IRON DISCHARGE PIPE AND VALVE THROUGH THE DAM AT THE 19 FOOT LEVEL, AND A CONCRETE-LINED RIM CHANNEL SPILLWAY 95 FEET LONG, CAPABLE OF DISCHARGING APPROXIMATELY 2,000 SECOND FEET OF WATER IN CASE OF A RISE OF 3 FEET ABOVE HIGH WATER LINE, WHICH IS 6 FEET BELOW THE CREST LEVEL. IT SEEMS IMPROBABLE THAT THE SPILLWAY WILL EVER HAVE TO DISCHARGE ANY SUCH AMOUNT OF WATER SINCE THE DISCHARGE OF COLD SPRINGS CREEK IS NORMALLY VERY SMALL, ABOUT 1/2 SECOND-FOOT, BUT PROVISION IS MADE FOR ANY FLOOD THOUGHT POSSIBLE. THE DAM IS INTENDED TO IMPOUND WATER IN A LAKE HAVING A SUPERFICIAL AREA OF APPROXIMATELY 15 ACRES AND A TOTAL LENGTH OF NEARLY ONE-HALF MILE AND ALSO AS AN INTEGRAL PART OF STATE HIGHWAY No. 81 IN LIEU OF A BRIDGE ACROSS COLD SPRINGS CREEK VALLEY.

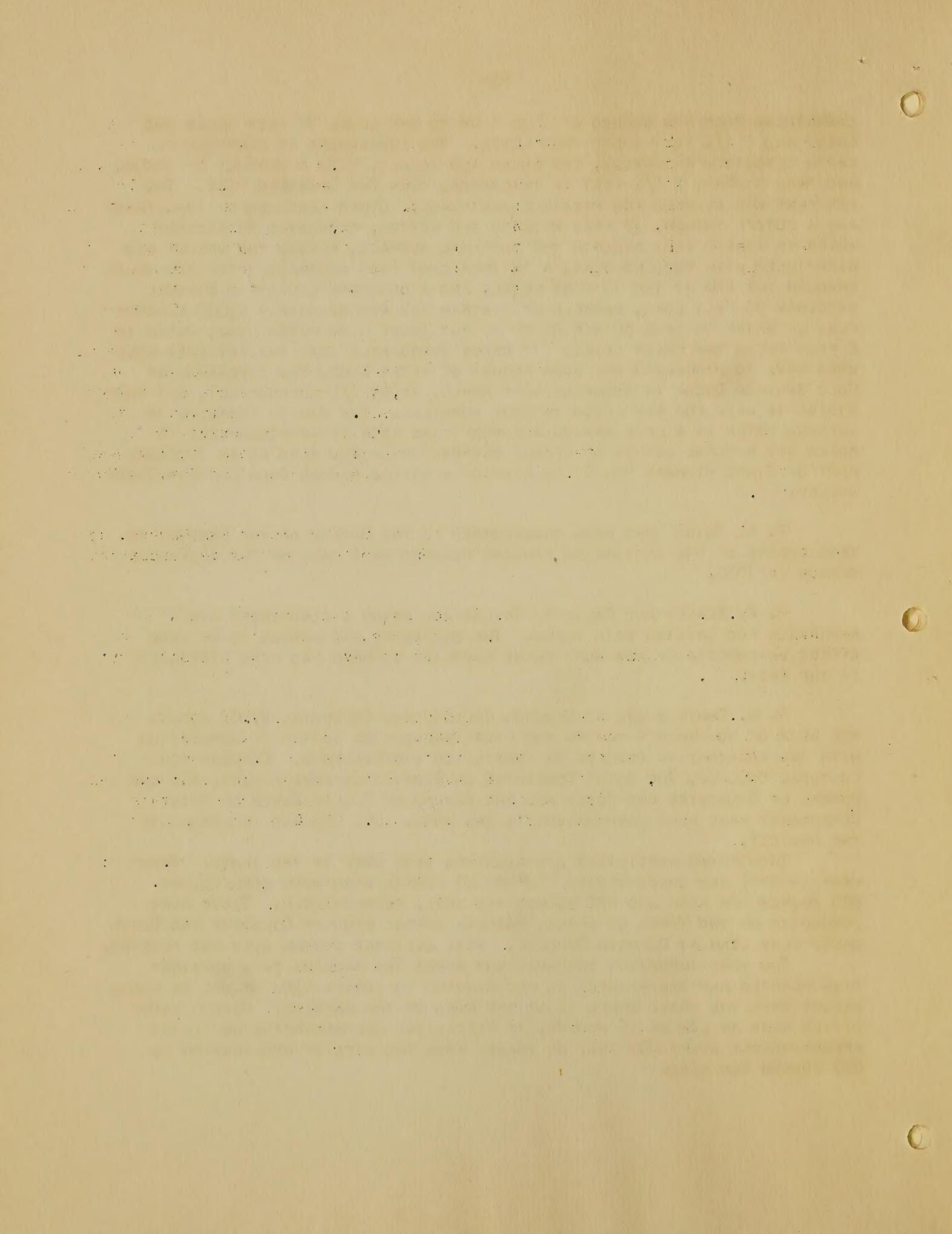
P. A. EWING HAS BEEN TRANSFERRED TO THE BUREAU OF THE CENSUS, TO TAKE CHARGE OF THE IRRIGATION CANVASS PLANNED AS A PART OF THE DECENTNIAL CENSUS OF 1930.

H. F. BLANEY AND COLIN A. TAYLOR ARE USING A COMPRESSED AIR APPARATUS FOR DRIVING SOIL TUBES. THE EQUIPMENT HAS PROVEN TO BE VERY EFFECTIVE ESPECIALLY FOR WORK WHERE SAMPLING BY HAND HAS BEEN DIFFICULT IN THE PAST.

G. A. CUMINGS WAS AT CLEMSON COLLEGE AND COLUMBIA, S. C. DURING THE WEEK OF NOVEMBER 4 MAKING THE FINAL HARVEST OF COTTON IN CONNECTION WITH THE COOPERATIVE PROJECT ON FERTILIZER DISTRIBUTORS. CLEMSON AGRI-CULTURAL COLLEGE, THE JOINT COMMITTEE ON FERTILIZER APPLICATION; AND THE BUREAU OF CHEMISTRY AND SOILS AND THE BUREAU OF PUBLIC ROADS OF THIS DEPARTMENT HAVE BEEN COOPERATING IN THE WORK. MR. CUMINGS IS LEADER OF THE PROJECT.

TWENTY-TWO FERTILIZER DISTRIBUTORS WERE USED IN THE TESTS. ORDINARY (4-8-4) AND CONCENTRATED (12-24-12) FERTILIZERS WERE APPLIED, AT 800 POUNDS PER ACRE AND 267 POUNDS PER ACRE, RESPECTIVELY. TESTS WERE CONDUCTED ON TWO TYPES OF SOILS, NORFOLK COARSE SAND AT COLUMBIA AND CECIL SANDY CLAY LOAM AT CLEMSON COLLEGE. ACID DELINTED COTTON SEED WAS PLANTED.

THE MORE IMPORTANT OBSERVATIONS WERE: THE WALKING TYPE COMBINATION PLANTER AND DISTRIBUTOR IS NOT ADAPTED TO CURVED ROWS OR USE ON BEDS, EXCEPT WHEN THE DRIVE WHEEL IS AT THE REAR OF THE MACHINE. HOPPER CAPACITIES WERE AS LOW AS 16 POUNDS, IF FERTILIZER NECESSITATING REFILLING APPROXIMATELY EVERY 200 FEET OF TRAVEL WHEN THE RATE OF APPLICATION IS 800 POUNDS PER ACRE.



SOME MACHINES HAD INACCESSIBLE PARTS AND WERE DIFFICULT TO CLEAN; SOME WERE VERY INCONVENIENT FOR MAKING THE DELIVERY RATE ADJUSTMENTS.

OVER HALF OF THE MACHINES HAD A MAXIMUM DELIVERY RATE LESS THAN 600 POUNDS PER ACRE. MANY FARMERS IN THE SOUTHEASTERN SECTION APPLY FERTILIZERS AT THE RATE OF 600 POUNDS PER ACRE OR GREATER. ON MANY MACHINES DELIVERY RATE COULD NOT BE ADJUSTED ACCURATELY OR AT SMALL INTERVALS.

WHEEL SLIPPAGE RAN AS HIGH AS 40 PER CENT ON SANDY SOIL.

INCLINATION OF THE MACHINE GREATLY AFFECTS THE DELIVERY RATE. ON CERTAIN TYPES OF MACHINES A CARELESS OPERATOR MAY APPLY ANYWHERE FROM 500 TO 3,000 POUNDS PER ACRE WITH THE SAME ADJUSTMENT OF THE MACHINE.

DISTRIBUTION OF FERTILIZER IS VERY UNEVEN IN SOME INSTANCES, DUE EITHER TO CERTAIN CHARACTERISTICS OF DESIGN OR MECHANICAL IRREGULARITIES OF THE MACHINE.

HIGHEST YIELDS WERE OBTAINED WHEN THE FERTILIZER WAS PLACED ABOUT 1 1/2 INCHES BELOW THE SEED IN A BAND ABOUT 2 INCHES WIDE AND UNIFORMLY DISTRIBUTED. FERTILIZER IN CONTACT WITH THE SEED SEVERELY INJURED GERMINATION. FERTILIZER WHICH IS BROADCAST OR DISTRIBUTED IN WIDE BANDS APPARENTLY LEACHES AWAY AND LOW YIELDS OF COTTON RESULT.

M. A. R. KELLEY HAS RETURNED FROM A FIELD TRIP THROUGH ILLINOIS, MISSOURI, OKLAHOMA, KANSAS, NEBRASKA, NORTH AND SOUTH DAKOTA AND MINNESOTA, COLLECTING DATA REGARDING THE STORAGE OF GRAIN ON FARMS. MR. KELLEY SECURED A LARGE NUMBER OF PHOTOGRAPHS OF VARIOUS TYPES OF GRAIN STORAGE HOUSES. HE WILL PREPARE TWO BULLETINS ONE REGARDING STORAGES ADAPTED TO SMALL GRAIN AND THE OTHER ON BUILDINGS ADAPTED TO THE STORAGE OF BOTH CORN AND SMALL GRAIN.

A. H. SENNER HAS COMPLETED THE MANUSCRIPT FOR A BULLETIN ON LUBRICATION.

C. E. RAMSER HAS DEVELOPED A SIMPLE SILT SAMPLING DEVICE TO BE USED IN CONNECTION WITH MEASURING SILT LOSSES OCCURRING WITH VARIOUS TYPES OF TERRACES. AS THE RAINFALL AT GUTHRIE, OKLAHOMA, IS LIMITED MR. RAMSER HAS FORWARDED THE DEVICE TO MR. BARTEL AT RALEIGH, NORTH CAROLINA WHERE IT WILL BE INSTALLED AND TESTED OUT UNDER FIELD CONDITIONS.

